

Description of the female of *Mortonagrion ceylonicum* Lieftinck, 1971 and amended description of the male (Zygoptera, Coenagrionidae) with notes on habitat, distribution and behaviour

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(Received 26 May 2010; final version received 28 November 2010)

The female of *Mortonagrion ceylonicum* is described and figured for the first time. The female was described briefly by Laidlaw (1924) but was not assigned to a genus or species. An amended description of the male is also provided. Additional notes on habitat, distribution and behaviour are given.

Keywords: Odonata; damselfly; Coenagrionidae; *Mortonagrion*; female; Sri Lanka; description; male; redescription

Introduction

Laidlaw (1924) described a single female from Ambalangoda, Sri Lanka that was a part of the collection of E. E. Green. He listed it as “?Genus ?Species” but wrote that it is “possibly ... allied to *Mortonagrion* of Fraser”. This specimen is currently in the collection at the Natural History Museum (NHM) London, UK. Lieftinck (1971) described and figured *Mortonagrion ceylonicum* sp. nov. from a single male collected at Kadaimparu, Sri Lanka by the Lund Expedition of 1962. This holotype male is in the Zoological Institute, University of Lund. He wrote “this is probably the same species as the one described by Laidlaw (1924, p. 373) as “?Genus ?Species”, after a single female from Ambalangoda”. Bedjanič, Conniff and de Silva Wijeyeratne (2007) included a photograph of a male and female in copula with the caption that the female had not been described. *M. ceylonicum* is the only species of this genus present in Sri Lanka and is endemic to Sri Lanka.

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Figure 1. *Mortonagrion ceylonicum* – female, lateral view (mature individual but not the female in copula described in text). Scale line: 5 mm.

Female of *Mortonagrion ceylonicum* (Figure 1)

Specimens studied

♀ and ♂ (in copula), plus 3 ♂♂, 1 ♀: Sri Lanka, Southern Province, Galle District, Hiyare Reservoir Forest Reserve, (6°3'3" N, 80°19'1" E, 120 m a.s.l.), 9 July 2008, leg. K. Conniff. The ♀ and ♂ in copula will be deposited at the Sri Lanka National Museum in Colombo.

Description of female in copula

Head

Labium light brown. Labrum and frons reddish brown, frons with faint bluish markings. Clypeus bright blue. Blue spot on gena. Face with short hairs. Vertex and occiput reddish brown with indistinct light-green lateral post-ocular spots. Eyes capped light green with an equatorial brown stripe fading to spotted green below and olive green beneath.

Thorax

Prothorax reddish brown. Dorsal surface of anterior lobe slightly raised with sky-blue median spot; median lobe slightly humped; posterior edge of posterior lobe darker brown and slightly turned up to form a ridge. Synthorax covered in fine hairs, brick red with sky-blue antehumeral stripe, and light-blue stripe that fades to yellow towards the mesocoxa above the metapleural suture. Below the metapleural suture, light reddish brown, turning to yellowish green beneath. Legs whitish blue at coxae. Femora and tibiae brownish beige. Wings (Figure 2): hyaline with

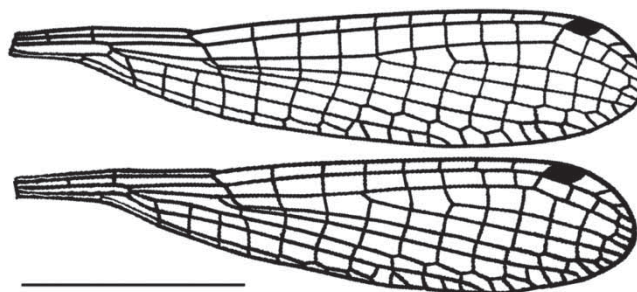


Figure 2. *Mortonagrion ceylonicum* - wings, female. Scale line: 5 mm.

blackish veins. Pt dull yellow, surrounded by brown with black veins, covers one cell. Fw 2 Ax, 9 Px; Hw 2 Ax, 8 Px (right wing), 7 Px (left wing).

Abdomen

Dark brown with sky-blue markings. Dorsum deepens in colour apically on each segment. Light grey brown ventrally. S1, with faded lateroventral triangular spot, faded basoventral spot. S2 with basal dorsolateral triangular spot, faded greenish ventrobasal spot. S3-8 with basal squarish dorsal spot tapering apically. S8 basal squarish dorsal spot covering half the segment. S9-10 unmarked. Anal appendages dark brown. Cerci bifid, pointed. Paraprocts conical, covered with short hairs. Ovipositor extending to end of abdomen, valvulae (gonoplags) bluish white, gonapophyses black, blunted.

Measurements [mm]: Total length 24.6; abdomen 19; cerci 0.6; Fw 13; Hw 12.

Variation among females

Younger individuals: Eyes capped tan or light green; blue markings purplish or faint; blue stripe above metapleural suture faint and interrupted, or faint and fading to pale green; no markings on S1 or reduced pale-green basolateral markings or ground colour reddish brown; Fw Px = 10. Older individuals: eyes capped with olive green. Other variations: Postocular spots absent or very faint; face all brown.

Measurements [mm, $n = 1$]: Total length 25; cerci 0.4.

Laidlaw's female specimen

The specimen described by Laidlaw (1924) was examined in the NHM. It agrees with the additional description above though details of the colouring of the head and prothorax are not discernible on the specimen because the head and prothorax have been glued. Though the wings of this specimen are slightly tinted as Laidlaw describes, the wings were not tinted in any fresh specimen observed. Additional details of this specimen: Fw 9 Px; Hw 8 Px (left wing), 7 Px (right wing). Additional measurements (mm): Total length 25; Fw 14.

Amended description of male

Lieftinck (1971) described the male and accurately figured the anal appendages but noted that the colours of the specimen were somewhat faded. The description that follows is based on fresh specimens as noted above and includes only those features that either were not described by Lieftinck or that differ from his description.

Head

Mostly black. Labrum, clypeus and spot on gena bluish green to apple green. Vertex and ocelli blackish brown. Large sky-blue post-ocular spots each oval with cone-shaped medial projection. Eyes grey black above with black equatorial line, apple green below.

Thorax

Prothorax blackish brown, anterior lobe with large blue median spot, lateral edges of median lobe edged with blue to blue green. All markings on thorax bright blue. Fw 9–10 Px, Hw 7–10 Px [$n = 4$].

Abdomen

Brown. S7 with blue basolateral spot as in S3–S6; S8 with large dorsolateral basal spot that covers one-half of the segment.

One older individual was overall much darker, postocular spots violet blue, antehumeral stripe dark violet blue, clypeus black, coxae and basal femora pruinose.

Measurements [mm, $n = 4$]: Total length 23.5–27; abdomen 18–21; cerci 0.4–0.6; Fw 12–12.5; Hw 11–12.

Habitat, distribution and behaviour

M. ceylonicum has been previously reported from Ambalangoda (6°13'3" N, 80°3'24" E, 6 m a.s.l.) (♀, 1 March 1911) (Laidlaw, 1924) and Kadaimparu (24 km N of Negombo) (♂; 3 January 1962) (Lieftinck, 1971). It has recently been recorded from the following additional locations:

- south shore of the reservoir at the Hiyare Forest Reserve, Galle, Southern District (6°3'4" N, 80°19'1" E, 120 m a.s.l.) (14 April 2006, ♂, K. Conniff & S. Gunasingha);
- north-east shore of the reservoir at the Hiyare Forest Reserve, Galle, Southern District (14 July 2007, 3 ♂, 2 ♀, 1 mating pair, K. Conniff); (13 August 2008, 5 ♂, 4 ♀, K. Conniff); (10 July 2008, 4 ♂, 6 ♀, K. Conniff); (12 February 2010, 3 ♂, 2 ♀, K. Conniff & S. Gunasingha); and
- Kotte Swamp, Pita Kotte, 6 km E of Colombo (6°53'3" N, 79°54'6" E, 5 m a.s.l.) (30 September 2006, ♂, K. Conniff).

Several populations were found at the Hiyare Forest Reserve, which is a 2.42 km² block of primary and secondary rain forest in the wet zone surrounding a reservoir. The habitat on the north-east shore of the reservoir was dense secondary forest with a small swampy stream that dries between monsoon seasons. The habitat on the south shore was also in secondary forest but with a swampy seepage with growth of soft grasses and ferns. Several Platystictidae species were also found in the lower edges of a small seepage. Another area of the south shore where both males and females were found was at the edge of the reservoir with tree cover and thick bracken-like ferns that mat together. This area is open on top and sunny, but very dense and shaded within the ferns. The Kotte Swamp location is scrub jungle with a thick growth of vines, scrub and pandanus. The soil is boggy during the wet season and dries between monsoons. A single male was found in a very dark area completely shaded at ground level on soft ferns under a pandanus clump.

Though Laidlaw did not describe the habitat at Ambalangoda, this is a small town on the south-west coast, 87 km south of Colombo in the wet zone, which at the time may have had mangrove systems. The location at Kadaimparu (24 km north of Negombo on the west coast) is in the dry zone and was described as a sandy beach with a nearby estuarine lagoon and surrounded by villages and coconut plantations (Lieftinck, 1971).

Behaviour observed

At Hiyare Reservoir Forest Reserve, males and females were observed to keep well to the undergrowth right along the side of the reservoir. They were shy and moved with slow, floating

movements. Once they disappeared into the deep foliage, they were difficult to spot, especially the background-coloured females. Males tended to be more abundant and easier to spot because of the bright blue markings. The females remained in the undergrowth until ready to mate while the males stayed more in the open, but were still fairly inconspicuous in shady, weedy areas. Courtship was not observed but individuals were seen in tandem and mating. Females were observed ovipositing in soft grasses growing in shallow water and into soft weeds within a small inlet of the reservoir next to ferns. The male held the female in tandem until ovipositing was completed.

Discussion

The genus *Mortonagrion*, as currently understood, comprises 13 species, most of which are found in tropical Asia, Japan and Korea. Africa has one species (*M. stygia* (Fraser, 1954), Belgian Congo). India, with which Sri Lanka is zoogeographically related, has two species: *M. aborense* (Laidlaw, 1914) and *M. varralli* Fraser, 1920. *M. aborense* is found in several locations in north-east India while *M. varralli* is recorded from the south-west coast, particularly near Mumbai. *M. ceylonicum* is easily separated from these two species by its smaller size, different colour and markings, distinctive male anal appendages and colour of the female prothorax (black with anterior lobes broadly blue and posterior lobe rounded and narrowly edged with blue in *M. aborense*; pale reddish brown, anterior lobe and sides pale blue in *M. varralli*). Since it has been recorded from January to August at several widely distributed locations, it is very possible that it will be discovered in more locations.

Acknowledgements

George van der Poorten for field assistance and photography; Madura de Silva (president) and members of the Wildlife Conservation Society Galle.

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